INDEX

(The first number cited is the issue number)

Author Index

Akgerman, N. 1–26-28
Altan, T. 1–26-28
Ames, S. L. 1–14-18
Aronson, A. H. 3–28-31
Babcock, T. C. 4–12-16
Borneman, Paul R. 1–50-55
Brassard, Theresa V. 2–30-34
Breen, D. H. 3–32-42
Brooks, G. J. 4–5-12
Clark, J. W. 1–4-11
Contractor, G. P. 2–34-38
Corrie, John D. 3–49-52
Crosby, Willis J. 3–7-12
Crossley, Frank A. 2–55-61
Cunningham, E. R. 2–7-12
D'Amore, Robert A. 2–12-15
Davis, D. W. 4–5-12
Dear, Hing 2–41-44
Defries, Richard F. 2–30-34
Domagala, Robert F. 2–18-22
Doubrava, J. H. 4–39-47
Foerster, George S. 1–19-22
Forrer, G. R. 3–57-64
Fricke, William G., Jr. 2–22-23
Fromson, R. E. 3–12-18
Geiger, Gordon H. 2–18-22
Gendron, Norman J. 1–13-14
Giler, Roger R. 4–48-52
Goode, R. J. 4–27-35
Green, Derek 3–18-25
Gurganus, T. B. 1–56-60
Hecker, Siegfried S. 3–42-48
Hitchler, Edward W. 3–25-27
Holt, Marshall 1–4-11
Hubert, J. F. 4–1-5
Joseph, R. A. 4–39-47
Judy, R. W., Jr. 4–27-35
Kaufman, J. G. 1–4-11
Kay, R. C. 4–1-5
Kennicott, W. L. 2–15-18
Klein, Albert J. 3–25-27
Klotz, Hartland P. 2–18-22
Knight, R. F. 2–34-38
Lambert, William N. 2–1-3
Lawley, Alan 3–1-7
Levy, Bernard S. 2–3-7
Lugosi, R. 3–12-18
Lukens, Karl F. 3–49-52
Malagari, F. A. 1–14-18
Mardirosian, Milton M. 1–60-61
Marshall, J. C. 4–12-16
Mehl, D. L. 4–16-20
Miller, F. J. 1–14-18
Mocarski, S. 4–21-27
Morgan, J. B. 1–1-4
Murphy, M. C. 1–41-50
Myrick, George W. 2–38-40
Nolan, Charles J. 2–30-34
Osborne, C. F. 4–5-12
Parker, W. O., Jr. 3–57-64
Phelps, E. H. 2–44-49
Pitt, Charles H. 4–57-61
Pollard, B. 3–28-31
Richart, John 2–50-54
Riffin, Paul V. 1–60-61
Rinnovatore, James V. 3–49-52
Sattler, F. J. 3–57-64
Schmidt, Frederick E., Jr. 3–1-7
Schuster, Joseph W. 2–38-40
Shoemaker, Robert H. 1–22-25
Siegel, Murray 2–38-40
Staley, J. T. 4–52-57
Stanislao, J. 2–24-29
Stewart, T. J. 4–12-16
Sullivan, J. W. 1–31-41
Switz, Richard J. 4–35-39
Tayler, Paul L. 4–57-61
Tipnis, V. A. 4–39-47
Turnbull, G. K. 1–56-60
Valentich, Joseph 1–11-13
Van Orden, Jerry M. 2–55-61
Van Vlack, Lawrence H. 2–50-54
Waterfall, F. David 1–29-31
Webster, Donald 3–53-57
Wells, Ralph G. 2–50-54
Yeh, H. C. 2–24-29
Young, R. J. 4–16-20
Ziats, A. W. 4–16-20
Zipp, R. D. 3–32-42

Subject Index

Age-hardening
  of Ti alloys 2–56-57
Aluminum alloys
  ballistic damage 1–7
  fracture 4–29-30
  fracture mechanics 1–4-10
  internally pressed cylinders 1–4-6
  R-curve characterizations 4–20-30
  service life 1–6-7
  structure 1–7-10
Aluminum alloys, specific types
  7049
    electrical conductivity 3–50-52
    exfoliation resistance 3–50-52
    fabrication 3–49
    mechanical properties 3–50-52
    thermal treatment 3–49
  7050
    electrical conductivity 3–50-52
    exfoliation resistance 3–50-52
    fabrication 3–49
    mechanical properties 3–50-52
    stress-corrosion cracking 4–55-56
    thermal treatment 3–49
  7175
    electrical conductivity 3–50-52
    exfoliation resistance 3–50-52
    fabrication 3–49
    mechanical properties 3–50-52
    thermal treatment 3–49
  PM94
    electrical conductivity 3–50-52
    exfoliation resistance 3–50-52
    fabrication 3–49
    mechanical properties 3–50-52
    thermal treatment 3–49
  Al-Mg-Cu-Zr alloys
    stress-corrosion cracking 4–55
  Al-Zn-Mg-Cu alloys
    stress-corrosion cracking 4–54-55
  Al-Zn-Mg-Cu-Cr alloys
    stress-corrosion cracking 4–56
Aluminum oxide
  as grinder wheel for steel 2–24-29
Annealing
  of Ti alloys 2–55-56
Anticorrosion coatings 2–41-42
Antifouling paints
  for protection from marine growth . . . 2–42
Atmosphere control furnaces
  in tools for cold forming 1–35
Austenitizing
  in tools for cold forming 1–33-35
  of P/M steels 4–26
Ballistic damages
  in Al alloys 1–7
Bending
  of steel sheets 3–47
Beryllium
  future use 4–37-39
  in cone skin assemblies 4–36-37
  in despin platforms 4–37
  in spin arm assemblies 4–37
  spacecraft applications 4–35-39
Blow molding
  of superplastic alloys 4–9-10
Brass
  drawability 3–1-7
  planar anisotropy 3–4-6
  plastic anisotropy 3–2-3
  tensile properties 3–3-4
Brittle materials
  strain rate 1–60-61
Calcium deoxidized steels
  applications 4–46-47
  heat treatment 4–43-44
  in differential and pinion gears . . . 4–46
  in drive pinions 4–46
  in drive ring gears 4–45-46
  machinability 4–44-45
  mechanical properties 4–43-44
  nonmetallic inclusions 4–42-43
Carbide size
  effect on cutting of high-speed steels . . 1–50-55
Carbide tools
  in cold forming 2–15-18
Carburizing
  of P/M steels 4–26
Case hardening
  in ferrous alloys 1–29-31
  in steels 1–29-31
Chip formation
  during grinding 2–24-29
Cleanliness
  in steel 1–1-4
Coatings
  anticorrosion paint systems 2–41-42
  antifouling paints 2–42
  deep submergence coatings 2–43
  pretreatment 2–44
  removal by molten salt baths 1–25
  surface preparations 2–43
  tidal zone coatings 2–43
Cold drawing
  of stainless steels 2–11
Cold extrusion
  effect of different steels 2–4-6
  effect of variables 2–3-4
  of stainless steels 2–11
  use of carbide tools 2–15-18
Cold forming
  cutting costs 2–1-3
  production limitations 2–1
  specification changes 2–1-3
  of stainless steels 2–7-12
Cold forming tools
  atmosphere control furnaces 1–35
  austenitizing 1–33-35
  design 1–32-33
  electrical discharge machining 1–39
  failure 1–31-41
  grinding 1–37-39
  heat treatment 1–33-36
  mechanical factors 1–39-41
  pack hardening 1–35
  preheating 1–33
  quenching 1–35
  stainless steel foil 1–36
  surface conditions 1–36-37
  tempering 1–35
  vacuum heat treatment 1–35-36
Cold heading
  of stainless steels 2–10-11
Cold rolling
  of stainless steels 2–11
Compression mold tooling systems 4–20
Compression molding
  designing 4–10
  heat treatment 4–10
  of superplastic alloys 4–10-11
Computers
  use in forging 1–26-28
Cone skin assemblies
  use of Be 4–36-37
Copper
  deep drawing 3–10-12
  effect on P/M steels 4–25
  hydrostatic extrusion 3–17-18
Copper alloys, specific types
  Cu-Ag
    effect of Ag 4–58-61
    effect of temperature 4–58
    recrystallization 4–58-60
    resistivity 4–58-59
  Cu-Se
    effect of Se 4–58-61
    effect of temperature 4–58
    recrystallization 4–58-60
    resistivity 4–58-59
  Cu-Ag-Se
    effect of Se 4–58-61
    effect of Ag 4–58-61

INDEX

(The first number cited is the issue number)

Author Index

Akgerman, N. 1–26-28
Altan, T. 1–26-28
Ames, S. L. 1–14-18
Aronson, A. H. 3–28-31
Babcock, T. C. 4–12-16
Borneman, Paul R. 1–50-55
Brassard, Theresa V. 2–30-34
Breen, D. H. 3–32-42
Brooks, G. J. 4–5-12
Clark, J. W. 1–4-11
Contractor, G. P. 2–34-38
Corrie, John D. 3–49-52
Crosby, Willis J. 3–7-12
Crossley, Frank A. 2–55-61
Cunningham, E. R. 2–7-12
D'Amore, Robert A. 2–12-15
Davis, D. W. 4–5-12
Dear, Hing 2–41-44
Defries, Richard F. 2–30-34
Domagala, Robert F. 2–18-22
Doubrava, J. H. 4–39-47
Foerster, George S. 1–19-22
Forrer, G. R. 3–57-64
Fricke, William G., Jr. 2–22-23
Fromson, R. E. 3–12-18
Geiger, Gordon H. 2–18-22
Gendron, Norman J. 1–13-14
Giler, Roger R. 4–48-52
Goode, R. J. 4–27-35
Green, Derek 3–18-25
Gurganus, T. B. 1–56-60
Hecker, Siegfried S. 3–42-48
Hitchler, Edward W. 3–25-27
Holt, Marshall 1–4-11
Hubert, J. F. 4–1-5
Joseph, R. A. 4–39-47
Judy, R. W., Jr. 4–27-35
Kaufman, J. G. 1–4-11
Kay, R. C. 4–1-5
Kennicott, W. L. 2–15-18
Klein, Albert J. 3–25-27
Klotz, Hartland P. 2–18-22
Knight, R. F. 2–34-38
Lambert, William N. 2–1-3
Lawley, Alan 3–1-7
Levy, Bernard S. 2–3-7
Lugosi, R. 3–12-18
Lukens, Karl F. 3–49-52
Malagari, F. A. 1–14-18
Mardirosian, Milton M. 1–60-61
Marshall, J. C. 4–12-16
Mehl, D. L. 4–16-20
Miller, F. J. 1–14-18
Mocarski, S. 4–21-27
Morgan, J. B. 1–1-4
Murphy, M. C. 1–41-50
Myrick, George W. 2–38-40
Nolan, Charles J. 2–30-34
Osborne, C. F. 4–5-12
Parker, W. O., Jr. 3–57-64
Phelps, E. H. 2–44-49
Pitt, Charles H. 4–57-61
Pollard, B. 3–28-31
Richart, John 2–50-54
Riffin, Paul V. 1–60-61
Rinnovatore, James V. 3–49-52
Sattler, F. J. 3–57-64
Schmidt, Frederick E., Jr. 3–1-7
Schuster, Joseph W. 2–38-40
Shoemaker, Robert H. 1–22-25
Siegel, Murray 2–38-40
Staley, J. T. 4–52-57
Stanislao, J. 2–24-29
Stewart, T. J. 4–12-16
Sullivan, J. W. 1–31-41
Switz, Richard J. 4–35-39
Tayler, Paul L. 4–57-61
Tipnis, V. A. 4–39-47
Turnbull, G. K. 1–56-60
Valentich, Joseph 1–11-13
Van Orden, Jerry M. 2–55-61
Van Vlack, Lawrence H. 2–50-54
Waterfall, F. David 1–29-31
Webster, Donald 3–53-57
Wells, Ralph G. 2–50-54
Yeh, H. C. 2–24-29
Young, R. J. 4–16-20
Ziats, A. W. 4–16-20
Zipp, R. D. 3–32-42

Subject Index

Age-hardening
  of Ti alloys 2–56-57
Aluminum alloys
  ballistic damage 1–7
  fracture 4–29-30
  fracture mechanics 1–4-10
  internally pressed cylinders 1–4-6
  R-curve characterizations 4–20-30
  service life 1–6-7
  structure 1–7-10
Aluminum alloys, specific types
  7049
    electrical conductivity 3–50-52
    exfoliation resistance 3–50-52
    fabrication 3–49
    mechanical properties 3–50-52
    thermal treatment 3–49
  7050
    electrical conductivity 3–50-52
    exfoliation resistance 3–50-52
    fabrication 3–49
    mechanical properties 3–50-52
    stress-corrosion cracking 4–55-56
    thermal treatment 3–49
  7175
    electrical conductivity 3–50-52
    exfoliation resistance 3–50-52
    fabrication 3–49
    mechanical properties 3–50-52
    thermal treatment 3–49
  PM94
    electrical conductivity 3–50-52
    exfoliation resistance 3–50-52
    fabrication 3–49
    mechanical properties 3–50-52
    thermal treatment 3–49
  Al-Mg-Cu-Zr alloys
    stress-corrosion cracking 4–55
  Al-Zn-Mg-Cu alloys
    stress-corrosion cracking 4–54-55
  Al-Zn-Mg-Cu-Cr alloys
    stress-corrosion cracking 4–56
Aluminum oxide
  as grinder wheel for steel 2–24-29
Annealing
  of Ti alloys 2–55-56
Anticorrosion coatings 2–41-42
Antifouling paints
  for protection from marine growth . . . 2–42
Atmosphere control furnaces
  in tools for cold forming 1–35
Austenitizing
  in tools for cold forming 1–33-35
  of P/M steels 4–26
Ballistic damages
  in Al alloys 1–7
Bending
  of steel sheets 3–47
Beryllium
  future use 4–37-39
  in cone skin assemblies 4–36-37
  in despin platforms 4–37
  in spin arm assemblies 4–37
  spacecraft applications 4–35-39
Blow molding
  of superplastic alloys 4–9-10
Brass
  drawability 3–1-7
  planar anisotropy 3–4-6
  plastic anisotropy 3–2-3
  tensile properties 3–3-4
Brittle materials
  strain rate 1–60-61
Calcium deoxidized steels
  applications 4–46-47
  heat treatment 4–43-44
  in differential and pinion gears . . . 4–46
  in drive pinions 4–46
  in drive ring gears 4–45-46
  machinability 4–44-45
  mechanical properties 4–43-44
  nonmetallic inclusions 4–42-43
Carbide size
  effect on cutting of high-speed steels . . 1–50-55
Carbide tools
  in cold forming 2–15-18
Carburizing
  of P/M steels 4–26
Case hardening
  in ferrous alloys 1–29-31
  in steels 1–29-31
Chip formation
  during grinding 2–24-29
Cleanliness
  in steel 1–1-4
Coatings
  anticorrosion paint systems 2–41-42
  antifouling paints 2–42
  deep submergence coatings 2–43
  pretreatment 2–44
  removal by molten salt baths 1–25
  surface preparations 2–43
  tidal zone coatings 2–43
Cold drawing
  of stainless steels 2–11
Cold extrusion
  effect of different steels 2–4-6
  effect of variables 2–3-4
  of stainless steels 2–11
  use of carbide tools 2–15-18
Cold forming
  cutting costs 2–1-3
  production limitations 2–1
  specification changes 2–1-3
  of stainless steels 2–7-12
Cold forming tools
  atmosphere control furnaces 1–35
  austenitizing 1–33-35
  design 1–32-33
  electrical discharge machining 1–39
  failure 1–31-41
  grinding 1–37-39
  heat treatment 1–33-36
  mechanical factors 1–39-41
  pack hardening 1–35
  preheating 1–33
  quenching 1–35
  stainless steel foil 1–36
  surface conditions 1–36-37
  tempering 1–35
  vacuum heat treatment 1–35-36
Cold heading
  of stainless steels 2–10-11
Cold rolling
  of stainless steels 2–11
Compression mold tooling systems 4–20
Compression molding
  designing 4–10
  heat treatment 4–10
  of superplastic alloys 4–10-11
Computers
  use in forging 1–26-28
Cone skin assemblies
  use of Be 4–36-37
Copper
  deep drawing 3–10-12
  effect on P/M steels 4–25
  hydrostatic extrusion 3–17-18
Copper alloys, specific types
  Cu-Ag
    effect of Ag 4–58-61
    effect of temperature 4–58
    recrystallization 4–58-60
    resistivity 4–58-59
  Cu-Se
    effect of Se 4–58-61
    effect of temperature 4–58
    recrystallization 4–58-60
    resistivity 4–58-59
  Cu-Ag-Se
    effect of Se 4–58-61
    effect of Ag 4–58-61

effect of temperature 4–58
recrystallization 4–58-60
resistivity 4–58-59
Copper shot
in H_2O fluidization 2–18-21
Copper wire
formed by helical extrusion 3–18-24
Corrosion
of stainless steel bolts 3–55-56
of Zn alloys 4–15-16
Corrosion resistance
of ferritic stainless steels 3–30
of $MoSi_2$ heating elements 4–49
of Ti alloys 2–60
Costs
in cold forming 2–1-3
Cracking
of ferritic-martensitic stainless steels . . 2–47-49
Creep
of steels 1–41-50
of Zn alloys 4–13-14
Cupping 3–7-9
Cutting
of high-speed steels 1–50-55
Deep drawing
of Cu 3–10-12
of stainless steels 2–8-10
of steel sheets 3–46-47
Deep submergence coatings 2–43
Design
of nuclear plants 3–57-64
of superplastic alloys 4–10
prevention of failure in tools for cold forming 1–32-33
Despin platforms
use of Be 4–37-39
Die castings
of Mg alloys 1–19-22
Differential gears
use of Ca deoxidized steels 4–45-46
Dimensional changes
of Ti alloys 2–59
Double replicas
as crack markers 2–22-23
Drawing
of brass 3–1-6
of steel sheet 3–25-27
Drawing force constant
using Cu anode 3–10-12
Drive pinions
use of Ca deoxidized steels 4–46
Drive ring gears
use of Ca deoxidized steels 4–45-46
Dynamic tear tests
on Al alloys 4–29-30
on steels 4–29
on Ti alloys 4–31
Electric furnaces
use of $MoSi_2$ heating elements 4–48-52
Electrical conductivity
of Al alloys 3–50-52
Electrical discharge machining
of tools for cold forming 1–39
Electrical properties
of $MoSi_2$ heating elements 4–48-49
Electrical resistivity
to 4000°F 1–11-13
Electrolytic salt baths 1–23-24
Electron microscopy
using double replicas as crack markers . . 2–22-23
Exfoliation resistance
of Al alloys 3–50-52
Fabrication
of Al alloys 3–49
of Ti alloys 2–59-60
Failure
in cold forming tools 1–31-41
Fatigue life
in steel 1–1-4
Fatigue properties
of steels 2–37-38
of Zn alloys 4–15
Fatigue resistance
of Ti alloys 2–58-59
Ferritic-martensitic stainless steels, specific types
12 pct Cr
cracking 2–47-48
metallurgical properties 2–44-45
prevention of cracking 2–48-49
stress-corrosion 2–45-47
Ferritic stainless steels, specific types
AISI type 409
effect of composition on corrosion resistance 3–30
effect of composition on formability . 3–30
effect of composition on metallography 3–28-29
effect of composition on tensile properties 3–30
effect of composition on weldability . 3–30
Ferrous alloys
case hardening 1–29-31
scuff resistance 1–29-31
Forging
use of computers 1–26-28
Forming
hole-enlargement test 3–25-27
of ferritic stainless steels 3–30
Forming limit curves
of steel sheets 3–43-46
Fracture
of Al alloys 4–29-30
of steels 4–29
of Ti alloys 4–31
use of electron microscopy 2–22-23
Fracture mechanics
of Al alloys 1–4-10
Fracture toughness
correlation with structure 3–32-41
Grinding
effect of wheel hardness 2–24-29
of tools for cold forming 1–37-39
Hardness
of P/M steels 4–22-24
of Zn alloys 4–14-15
Heat treatment
in Ca deoxidized steels 4–43-44
of superplastic alloys 4–6, 10
of Ti alloys 1–57-59
prevention of failure in tools for cold forming 1–33-36
Helical extrusion
of Cu wire 3–18-24
High-speed steels, specific types
AISI M-2
effect of carbide size on cutting . . . 1–50-55
Hole-enlargement test
for sheet formability 3–25-27
Hydrostatic extrusion
application to Cu 3–17-18
augmented extrusion 3–14
billet surface finish/pressure relationship . 3–16
continuous extrusion 3–14-15
conventional extrusion 3–14
helical extrusion 3–15
pressure/die relationship 3–16
pressure/extrusion relationship 3–15
rate of pressurization/pressure relationship 3–16
Impact energy
of Zn alloys 4–15
Impact properties
of steels 2–36-37
Inspection
of nuclear plants 3–57-64
surface examination 3–61-62
visual examination 3–61
volumetric examination 3–62-64
Internally pressed cylinders
of Al alloys 1–4-6
Iron alloys, specific types
Fe-Mn
subscale inclusions 2–51
Fe-Mn-Al
subscale inclusions 2–53
Fe-Mn-Cr
subscale inclusions 2–53
Fe-Mn-Mo
subscale inclusions 2–52-53
Fe-Mn-Ni
subscale inclusions 2–53
Fe-Mn-Si
subscale inclusions 2–51-52
Knurling
of steels 2–12-14
Lapping
for smooth surfaces on metallographic specimens 1–13-14
Machining
of Ca deoxidized steels 4–44-45
Magnesium alloys, specific types
AS41A
for die casting 1–19-20
Mg-Al alloys
effects of rare earths 1–20-21
for die casting 1–19-22
Mg-$AlSi_2$ alloys
for die casting 1–21-22
Manganese
effect on P/M steels 4–25
Mechanical failures
in tools for cold forming 1–39-41
Mechanical properties
of Al alloys 3–50-52
of Ca deoxidized steels 4–43-44
of $MoSi_2$ heating elements 4–48
of steel forgings 2–31-34
Metallography
of ferritic stainless steels 3–28-29
Metallurgical properties
of ferritic-martensitic stainless steels . . 2–44-45
of steel sheets 3–42
Microstructure
of P/M steels 4–24-25
of steel forgings 2–31-34
of Ti alloys 1–56-60
Mixed-mode fracture
correlation with fracture toughness . . . 3–38-40
Molten salt baths
electrolytic salt baths 1–23-24
removal of sludge products 1–22-23
removing protective coatings 1–25
removing scales 1–24-25
soil removal 1–22
Molybdenum
effect on P/M steels 4–25
effect on steels 2–34-38
Molybdenum disilicide heating elements
applications 4–50-52
corrosion resistance 4–49
electrical properties 4–48-49
high temperature properties 4–49-50
mechanical properties 4–48
physical properties 4–48
sizes and shapes 4–50
Nickel
effect on P/M steels 4–25
Nonferrous metals
coatings 2–43-44
Nonmetallic inclusions
in Ca deoxidized steels 4–42-43
Non-oriented silicon steels
preparation 1–17-18
use 1–17-18
Nuclear plants
design and inspection philosophy . . . 3–58-59
designing for inspection 3–59-60
in-service inspection 3–57-64
physical plant 3–59
surface examination 3–61-62
visual examination 3–61
volumetric examination 3–62-64
Oriented silicon steels
preparation 1–16-17
use 1–16-17
Oxygen
effect on P/M steels 4–25-26
Pack hardening
in tools for cold forming 1–35
Physical properties
of $MoSi_2$ heating elements 4–48
Pinch pointing
of steels 2–14-15
Pinion gears
use of Ca deoxidized steels 4–46
Planar anisotropy
of brass 3–4-6
Plane strain fracture
correlation with fracture toughness . . . 3–35-38
Plane stress fracture
correlation with fracture toughness . . . 3–34-35
Plastic anisotropy
of brass 3–2-3
Plastic mold forming
of superplastic alloys 4–11-12
Powder metal steels
austenitizing 4–26
carburizing 4–26
development 4–21-22
double sintering 4–26
effect of Cu 4–25
effect of Mn 4–25
effect of Mo 4–25

effect of Ni 4–25
effect of O_2 4–25-26
effect of S 4–25-26
hardness 4–22-24
microstructure 4–24-25
Precision cold rolling
of stainless steels 2–11-12
Preheating
in tools for cold forming 1–33
Press forming
of stainless steels 2–8-10
Pressure thermoforming tooling systems
tool geometry 4–18
tooling materials 4–19-20
Pressure vessel forgings
effect of microstructure on mechanical properties 2–30-34
Progress in cold forming . . 2–1-3; 2–3-6; 2–7-12; 2–12-15; 2–15-18
Progress in copper forming. . 3–1-7; 3–7-12; 3–12-18; 3–18-25
Progress in superplasticity . . 4–1-5; 4–5-12; 4–12-16; 4–16-20
Progress in testing techniques . 1–1-4; 1–4-11; 1–11-13; 1–13-14
Quenching
in tools for cold forming 1–35
R-curve characterizations
on Al alloys 4–29-30
on steels 4–29
on Ti alloys 4–31
Rapid quenching
in H_2O-fluidized bed 2–18-21
Rare earths
effect on Mg alloys 1–20-21
Recrystallization
of Cu alloys 4–58-60
Resistivity
of Cu alloys 4–58-59
Rupture
of steels 1–43-45
Scales
removal by molten salt baths 1–24-25
Scuff resistance
case hardening 1–29-31
use of salt baths 1–29-31
Secondary creep
of steels 1–45-47
Selenium
effect on Cu alloys 4–58-61
Shapes
of $MoSi_2$ heating elements 4–50
Sheet thermoforming tooling systems
pressure-forming 4–17-18
vacuum forming 4–17
Sheets
of superplastic alloys 4–1-3
Silicon steels
making non-oriented steels 1–17-18
making oriented steels 1–16-17
properties 1–15-16
use of oriented steels 1–16-17
using non-oriented steels 1–17-18
Silver
effect on Cu alloys 4–58-61
Sintering
of P/M steels 4–26
Sizes
of $MoSi_2$ heating elements 4–50
Sludge products
removal by use of molten salt baths . . 1–22-23
Soil removal
use of molten salt baths 1–22
Specifications
correlation of American and German . . 2–38-40
Spacecraft
use of Be 4–35-39
Spin arm assemblies
use of Be 4–37
Springback
of steel sheets 3–48
Stainless steel bolts, specific types
AFC 77
corrosion tests 3–55-56
stress corrosion tests 3–56
tensile tests 3–54-55
Stainless steel foils
in tools for cold forming 1–36
Stainless steels
cold extruding 2–11
cold forming 2–7-8
cold heading 2–10-11
cold rolling and drawing 2–11
deep drawing 2–8-10
precision cold rolling 2–11-12
press forming 2–8-10
Steam turbines
effect of creep on steels 1–41-50
Steel forgings
mechanical properties 2–31-34
microstructure 2–31-34
Steel sheet
drawing 3–25-27
Steel sheets, specific types
HSLA
bending 3–47
deep drawing 3–46-47
forming limit curves 3–43-46
metallurgy 3–42
springback 3–48
strain distributions 3–46
stretch flanging 3–47
stretching 3–47-48
tensile properties 3–43-44
Steels
case hardening 1–29-31
cleanliness 1–1-4
coatings for protection from seawater . . 2–41-44
cold extrusion 2–3-6
fatigue life 1–1-4
fracture 4–29
R-curve characterizations 4–29
scuff resistance 1–29-31
use of ultrasonics 1–1-4
Steels, specific types
C-1085
fracture toughness 3–32-41
HSLA
effect of Mo 2–34-38
fatigue properties 2–37-38
impact properties 2–36-37
tensile properties 2–35-36
SAE 4340
effect of wheel hardness on grinding . 2–24-29
Cr-Mo steels
creep 1–41-50
creep-rupture 1–43-45
creep-strain 1–43-45
secondary creep 1–45-47
stress dependence of strain 1–47-50
Strain
of steel sheets 3–46
of steels 1–43-45, 47-50
Strain rate
of brittle materials 1–60-61
Strength
of Zn alloys 4–12-14
Stress
of Zn alloys 4–12-14
Stress corrosion
of stainless steel bolts 3–56
of ferritic-martensitic stainless steels . . 2–45-47
Stress-corrosion cracking
of Al alloys 4–54-57
Stress rupture
of Zn alloys 4–13-14
Stretch flanging
of steel sheets 3–47
Stretching
of steel sheets 3–47-48
Structure
of Al alloys 1–7-10
Subscale inclusions
in Fe alloys 2–50-54
Sulfur
effect on P/M steels 4–25-26
Superplastic alloys
blow molding 4–9-10
compression molding 4–10-11
forming 4–5-9
plastic mold forming 4–11-12
sheet applications 4–1-3
three-dimensional parts applications . . 4–3-5
Superplastic forming
advantages 4–5-6
heat treatment 4–6
thermoforming sheet 4–6-9
Superplastic forming tools
compression mold tooling systems . . . 4–20
sheet thermoform tooling systems . . . 4–17-18
tooling for pressure thermoforming . . . 4–18-20
Surface conditions
of tools for cold forming 1–36-37
Surface examination
of nuclear plants 3–61-62
Tempering
in tools for cold forming 1–35
Tensile properties
of brass 3–3-4
of ferritic stainless steels 3–30
of stainless steel bolts 3–55
of steel sheets 3–43-45
of steels 2–35-36
Thermal treatment
of Al alloys 3–49
Thermoforming sheets
in forming of superplastic alloys . . . 4–6-9
Thread rolling
of steels 2–12-14
Three-dimensional parts
of superplastic alloys 4–35
Tidal zone coatings 2–43
Titanium alloys
fracture 4–31
R-curve characterizations 4–31
Titanium alloys, specific types
Transage 129
age-hardening 2–56-57
annealing 2–55-56
corrosion resistance 2–60
dimensional changes 2–59
fatigue resistance 2–58-59
weldability 2–57-58
Ti-6Al-4V forgings
heat treatment 1–57-59
microstructure 1–56-60
Ultrasonics
rate cleanliness of steel 1–1-4
rate fatigue life of steel 1–1-4
Vacuum heat treatment
in tools for cold forming 1–35-36
Visual examination
of nuclear plants 3–61
Water-fluidization
rapid quenching 2–18-21
using Cu shot 2–18-21
Welding
of ferritic stainless steels 3–30
of Ti alloys 2–57-58
Wheel hardness
effect of grinding parameters of steel . . 2–24-29
Zinc alloys, specific types
Zn-22-Al
corrosion 4–15-16
creep and stress rupture strength . . . 4–13-14
fatigue strength 4–15
hardness 4–14-15
impact energy 4–15
short term strength 4–13
stress and strength 4–12-13